

## CLAIMS

What is claimed is:

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1. A control valve for a vehicular brake system comprising:  
a valve seat;  
an adapter having a bore formed therethrough, said adapter fixed relative to  
said seat;  
a pin slidably positioned within said bore and further comprising a first and  
second end, said first end of said pin comprising a rounded surface;  
a biasing spring engaging said pin and said valve seat for forcing said pin in a  
10 direction that is one of away from said valve seat or towards said valve seat;  
said armature being slidably supported relative to said adapter and a magnetic  
pole member for movement between a fully open position and a closed position, said  
armature engaging said first end of said pin whereby movement of said armature  
causes movement of said pin, said armature and adapter further comprising  
15 complementary stepped portions wherein said adapter stepped portions are adapted  
to receive said armature stepped portions, said stepped portions defining a first  
lateral flux gap and second lateral flux gap; and  
a flux ring mounted on said adapter and being disposed about a portion of  
said armature, a third lateral flux gap being defined between the portion of said flux  
20 ring disposed about said armature and the portion of said armature disposed in said  
flux ring; and  
an electrical coil for selectively inducing a magnetic field for moving said  
armature.
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2. A control valve for a vehicular brake system comprising:  
a valve seat;  
an adapter having a bore formed therethrough, said adapter fixed relative to  
said seat;

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a pin slidably positioned within said bore and further comprising a first and second end, said first end of said pin comprising a rounded surface;

a biasing spring engaging said pin and said valve seat for forcing said pin in a direction that is one of away from said valve seat or towards said valve seat;

5 a valve armature engaging said pin for movement therewith, said armature being slidably supported relative to said adapter for movement between a fully open position and a closed position, said armature defining a recess adapted to pivotably receive said rounded first end of said pin; and

10 an electrical coil for selectively inducing a magnetic field for moving said armature.

3. The valve defined in Claim 2 wherein said second end of said pin is slidably supported within a pin guide structure.

15 4. A control valve for a vehicular brake system comprising:

a valve seat;

an adapter having a bore formed therethrough, said adapter fixed relative to said seat;

20 a pin slidably positioned within said bore and further comprising a first and second end, said second end of said pin comprising a rounded surface;

a biasing spring engaging said pin and said valve seat for forcing said pin in a direction that is one of away from said valve seat or towards said valve seat;

25 a valve armature engaging said pin for movement therewith, said armature being slidably supported relative to said adapter for movement between a fully open position and a closed position;

said seat further defining a recess adapted to pivotably receive said rounded second end of said pin; and

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an electrical coil for selectively inducing a magnetic field for moving said armature.

- 5                   5. A control valve for a vehicular brake system comprising:  
a valve seat;  
an adapter having a bore formed therethrough, said adapter fixed relative to said seat;  
a pin slidably positioned within said bore and further comprising a first and second end, said first end of said pin comprising a rounded surface;  
10                   a biasing spring engaging said pin and said valve seat for forcing said pin in a direction that is one of away from said valve seat or towards said valve seat;  
said armature being slidably supported relative to said adapter and said magnetic pole member for movement between a fully open position and a closed position, said armature engaging said first end of said pin whereby movement of said  
15                   armature causes movement of said pin, said armature and adapter further comprising complementary stepped portions wherein said adapter stepped portions are adapted to receive said armature stepped portions, said stepped portions defining a plurality of flux gaps; and  
an electrical coil for selectively inducing a magnetic field for moving said  
20                   armature.

6.           A coil operated control valve comprising:  
a valve seat;  
a pole piece defining at least a first pole shoulder and a second pole shoulder that are  
25           both stationary relative to said valve seat;  
an armature moving a valve portion relative to said valve seat to control flow of a fluid through said valve seat, said armature defining at least a first armature shoulder and a second armature shoulder. Said first armature shoulder cooperating with said

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first pole shoulder to define a first lateral flux gap said second armature shoulder cooperating with said second pole shoulder to define a second lateral flux gap.

5 7. The control valve defined in Claim 6 wherein said pole piece is fixed relative to said valve seat.

8. The control valve defined in Claim 7 wherein said armature moves a pin on which the valve portion is formed.

10 9. The control valve defined in Claim 8 wherein a lateral gap formed is formed by a tubular flux ring having an inner diameter that is greater than a major outer diameter of the armature.

15 10. The control valve defined in Claim 8 wherein a lateral gap is formed external to the major outer diameter of the armature and a further lateral flux gap is internal to the major outer diameter of the armature.

20 11. A control valve for a vehicular brake system comprising:  
a valve seat;  
an adapter having a bore formed therethrough, said adapter fixed relative to said seat;  
an armature;  
a biasing spring engaging said armature and a magnetic pole member for forcing said armature in a direction that is one of away from said valve seat or  
25 towards said valve seat;  
said armature being slidably supported relative to the magnetic pole member for movement between a fully open position and a closed position, said armature

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engaging said valve seat whereby movement of said armature causes said armature to respectively unseat or seat the valve;

- said armature and magnetic pole member further comprising complementary stepped portions wherein said pole member stepped portions are adapted to receive
- 5 said armature stepped portions, said stepped portions defining a first lateral flux gap and second lateral flux gap; and

- a flux ring mounted on said magnetic pole member and is disposed about a portion of said armature, a third lateral flux gap being defined between the portion of said flux ring disposed about said armature and the portion of said armature disposed
- 10 on said flux ring; and

an electrical coil for selectively inducing a magnetic field for moving said armature.

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